

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/EP2005/003080

International filing date (day/month/year)  
23.03.2005

Priority date (day/month/year)  
27.03.2004

International Patent Classification (IPC) or both national classification and IPC  
B01D53/04, B01J23/58, B01J23/63, B01J21/00

Applicant  
UMICORE AG & CO. KG

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/EP2005/003080

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. II Priority**

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1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43b/s.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43b/s.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-14
Inventive step (IS)	Yes: Claims	
	No: Claims	1-14
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US-A-4 883 783 (BURK, JR. ET AL) 28 November 1989 (1989-11-28)

D2: EP-A-0 945 165 (DEGUSSA-HUELS AKTIENGESELLSCHAFT; OMG AG & CO.  
KG) 29 September 1999 (1999-09-29)

**The present application does not meet the criteria of Article 33(1) PCT, because of the  
following reasons:**

**1.1 D1** (column 2, lines 39 - column 3, line 21; column 3, lines 46-61; examples 6-9; claims 1,2,8,11) discloses a  $\text{SO}_x$ -oxidation catalyst, which contains a  $\text{MgAl}_2\text{O}_4$ -spinel carrier (a spinel is a mixed oxide of magnesium and aluminium), which contains 28.3 wt% magnesium oxide. On that carrier Mg-, Ca-, Sr-, Ba- and alkaline oxides (which are nitrogen oxide storage components) and platinum are deposited and the carrier is doped with cerium oxide (a rare earth oxide).

**D2** (claims 1-3, 6) discloses a  $\text{SO}_x$ -trap oxidation catalyst, which contains a  $\text{MgAl}_2\text{O}_4$ -spinel carrier with a slight stoichiometric excess of MgO (molar ratio  $\text{MgO}:\text{Al}_2\text{O}_3=1.1$ , a spinel is a mixed oxide of magnesium and aluminium). As magnesium oxide can be selected from the list of possible nitrogen oxide storage materials in claim 4 of the present application (see also under VIII point 1.2) the material of D2 still falls under the scope of claim 1. On that carrier Mg-, Ca-, Sr-, Ba- and alkaline oxides and platinum are deposited and the carrier is doped with rare earth oxides.

**Therefore the subject-matter of at least claim 1 is not new in the sense of Article 33(2) PCT.**

**1.2** Dependent claims 2-14 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and/or inventive step, because said additional features are either disclosed in the prior art documents (see above) or are trivial or within the competence of a skilled person looking for alternative catalysts or processes.

**Re Item VIII**

**Certain observations on the international application**

**The application does not meet the requirements of Article 6 PCT, because of the following reasons:**

**1.1** The term "nitrogen oxide storage component" in claim 1 (product claim) represents a functional definition which is unsuitable for the definition of a product as it is not clear which materials would fall under the scope of this definition and which do not. So in the examination this feature is disregarded.

In the reasoning above it was assumed that any of the compounds listed in claim 4 are "nitrogen oxide storage components".

**The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.**

**1.2** Claim 1 states that the magnesium-aluminium mixed oxide should contain less than 30 wt% magnesium oxide, but from claim 4 it is clear, that magnesium oxide can be one a nitrogen oxide storage component, which means the content of magnesium oxide can actually be higher than 30 wt%.

**Therefore claim 1 is unclear.**